

Signal, storage medium, method and device for encoding, method and device for decoding

This Application is A 371 of PCT /IB03/01542  
Filed on 4/17/2003.

The invention relates to a signal comprising a runlength limited (RLL) encoded binary  $d,k$  channel bitstream, wherein parameter  $d$  defines a minimum number and parameter  $k$  defines a maximum number of zeroes between any two ones of said bitstream or vice versa, comprising a number of sections of respectively  $N$  successive RLL channel bits, called RLL rows, each RLL row representing a parity-check code-word, called row parity-check code-word, in which a so-called row-based parity-check constraint for said RLL row has been realized.

Furthermore, the invention relates to a storage medium comprising such a signal.

Furthermore, the invention relates to a method for encoding a stream of user data bits comprising the step of runlength limited (RLL) encoding said stream of user data bits into a binary  $d,k$  channel bitstream comprising a number of sections of respectively  $N$  successive RLL channel bits, called RLL rows, wherein parameter  $d$  defines a minimum number and parameter  $k$  defines a maximum number of zeroes between any two ones of said bitstream or vice versa, each RLL row representing a parity-check code-word, called row parity-check code-word in which a so-called row-based parity-check constraint for said RLL row has been realized.

Furthermore, the invention relates to a corresponding device according to the preamble of claim 33.

Furthermore, the invention relates to a method for decoding such a signal or a signal being encoded according to such a method for encoding.

Furthermore, the invention relates to a device for decoding such a signal or a signal being encoded according to such a method for encoding.

In the field of mass data storage media, such as optical discs, magnetic discs and magneto-optical discs, digital surface recorders are used that are substantially narrow bandpass signaling devices. Therefore, the data to be recorded on such media is encoded such, to eliminate very long as well as very short written pits. This encoding is called "modulation coding". It typically employs a runlength limited (RLL) code which is characterized by two parameters, namely the constraints  $d,k$ , wherein  $d \leq k$ . RLL-encoded